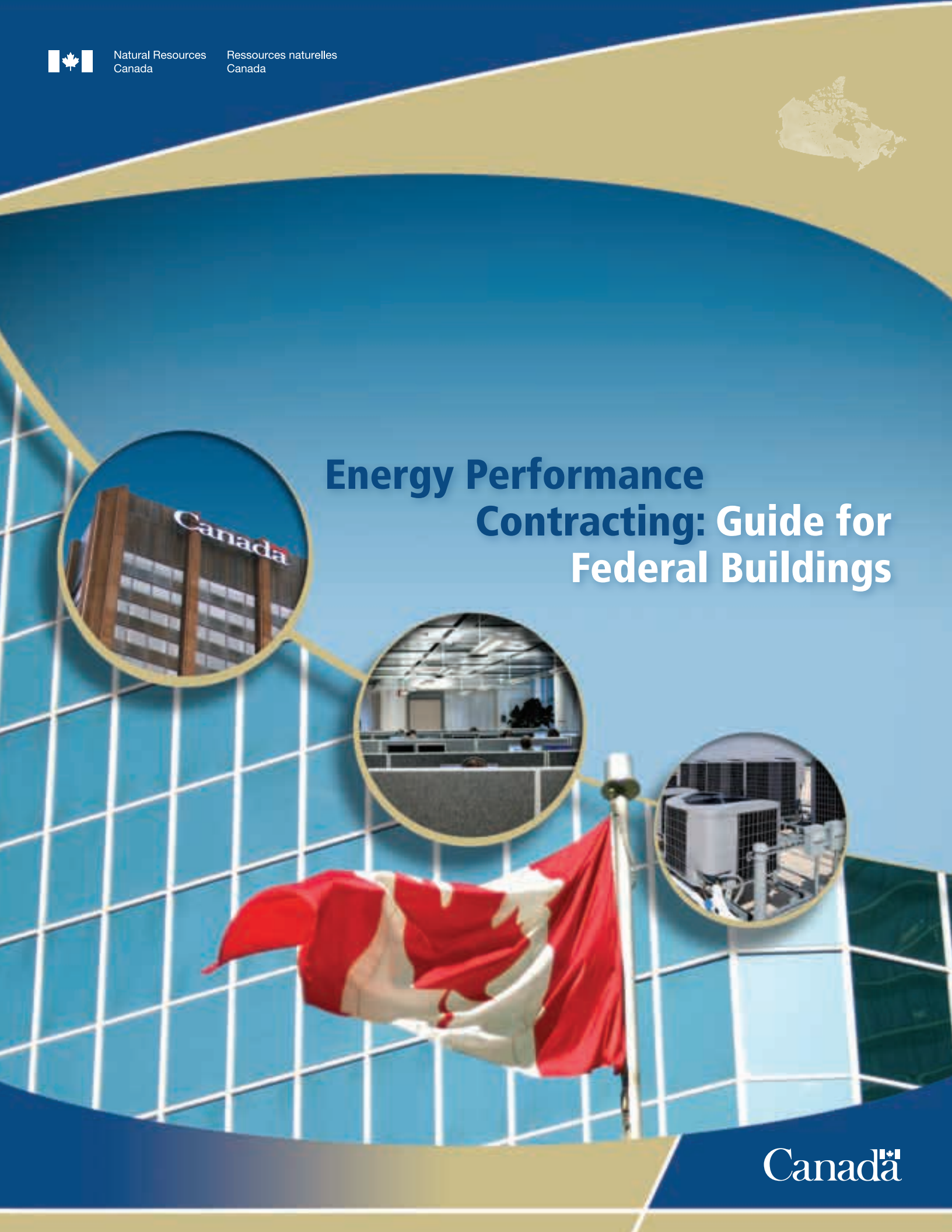
Natural Resources Canada
Ressources naturelles Canada

Energy Performance Contracting: Guide for Federal Buildings



Canada

Aussi disponible en français sous le titre : Marché de services énergétiques : Guide pour les bâtiments fédéraux

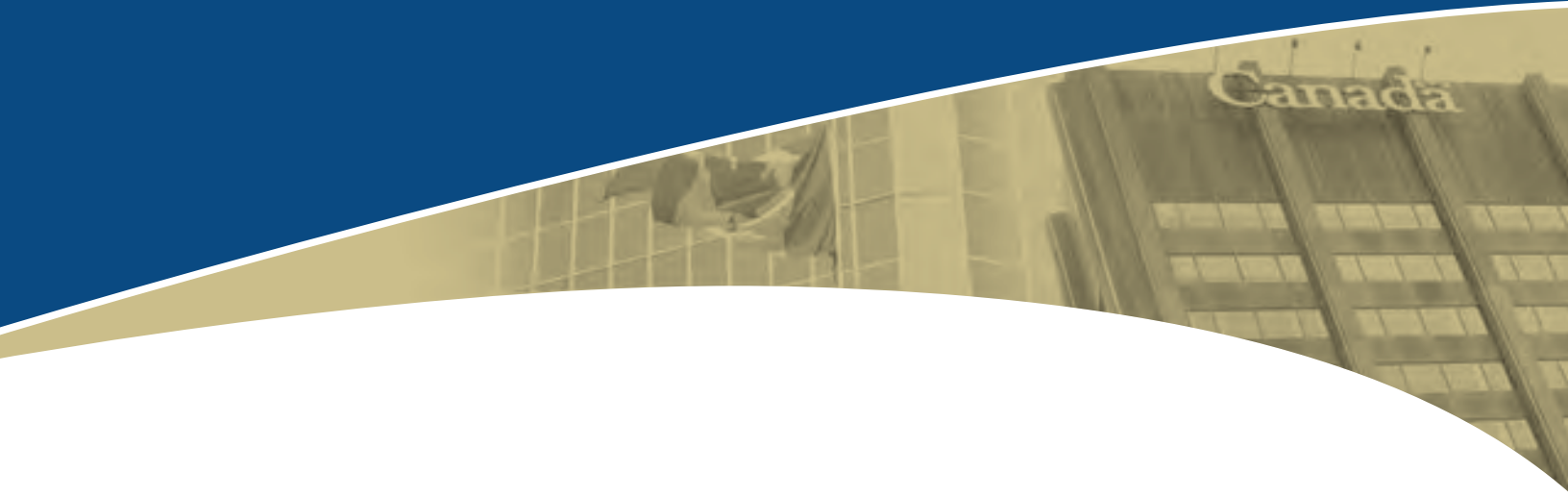
Cat. No. M144-245/2012E-PDF (On-line)

ISBN 978-1-100-21501-3

Natural Resources Canada's Office of Energy Efficiency
Leading Canadians to Energy Efficiency at Home, at Work and on the Road

PRINTED IN CANADA
IMPRIMÉ AU CANADA

Recycled paper



Contents

CHAPTER 1

1 Introduction to Energy Performance Contracting

2 What is the Federal Buildings Initiative?

2 What is an energy performance contract and how does it work?

3 Types of energy performance contracts

4 Benefits of an energy performance contract for federal buildings

4 Common misconceptions about energy performance contracts

5 Step-by-step approach to successful energy performance contracting

CHAPTER 2

7 Step 1: Getting Started

7 Gather information

8 Helpful criteria to consider when undertaking an energy performance contract

9 Obtain senior management support

9 Assemble the project team

10 Opportunity assessment

10 Build the business case

11 Set your energy performance contract objectives

CHAPTER 3

13 Step 2: Selecting an Energy Service Company

14 Develop the Request for Proposal and supporting documents

14 Internal approval of tendering documents

15 Tender your energy performance contract

15 Create a review committee

15 Evaluate proposals from bidders

16 Select the winning proposal: The pre-selection interview

CHAPTER 4

17 Step 3: Awarding the Contract

17 Plan internal resources requirements

17 Notify unsuccessful bidders

17 Submit and manage the Treasury Board submission

18 Prepare a minister's briefing note

18 Energy service company completes the feasibility study

19 Refine the contract based on the results of the feasibility study

CHAPTER 5

20 **Step 4: Managing the Contract**

20 Responsibilities during the energy performance contract

21 Concept approval

21 Design approval

21 Subcontractor approval

22 Construction schedule approval

22 Project implementation

23 Commencement of the payback period

23 Annual reconciliation report

23 Track payments

24 Post-implementation payments

24 Ongoing training

24 Awareness campaign

25 Reporting, measurement and verification, and maintenance during the contract period

CHAPTER 6

27 **Step 5: Maintaining the Savings after the Energy Performance Contract Project is Finished**

27 Tracking energy use

27 Operations and maintenance standards

28 Commissioning

28 Other improvements

CHAPTER 7

29 **Considerations**

29 Notices of irregularity

29 Base year adjustments

29 Utility price fluctuations

30 Interest rate fluctuations

CHAPTER 8

31 **Common Issues with Energy Performance Contracts**

31 Who is in charge of building operations?

31 Occupant comfort

31 Changing faces

32 Who gets the savings?

32 Calculating energy savings adjusted to weather

33 Accounting savings versus real savings

CHAPTER 9

34 **Conclusion**

CHAPTER 10

35 **Case Studies, Project Synopses and Highlights**

APPENDIX 1

36 **Check List: Taking Stock of Your Building(s)**

APPENDIX 2

37 **Sample Proposal Assessment Criteria**

CHAPTER 1

Introduction to Energy Performance Contracting

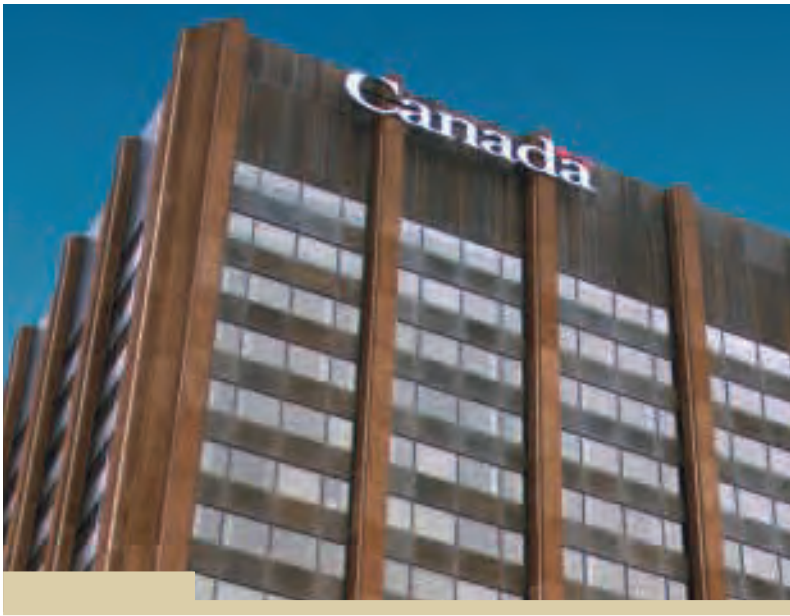
The Government of Canada is committed to minimizing the environmental footprint of its operations through the Federal Sustainable Development Strategy. This strategy aims to reduce greenhouse gas emissions in federal buildings to 17 percent lower than 2005 levels by 2020. (For more information on the Federal Sustainable Development Strategy, visit www.ec.gc.ca/dd-sd/default.asp?lang=En&n=D39CB7AC-1.)

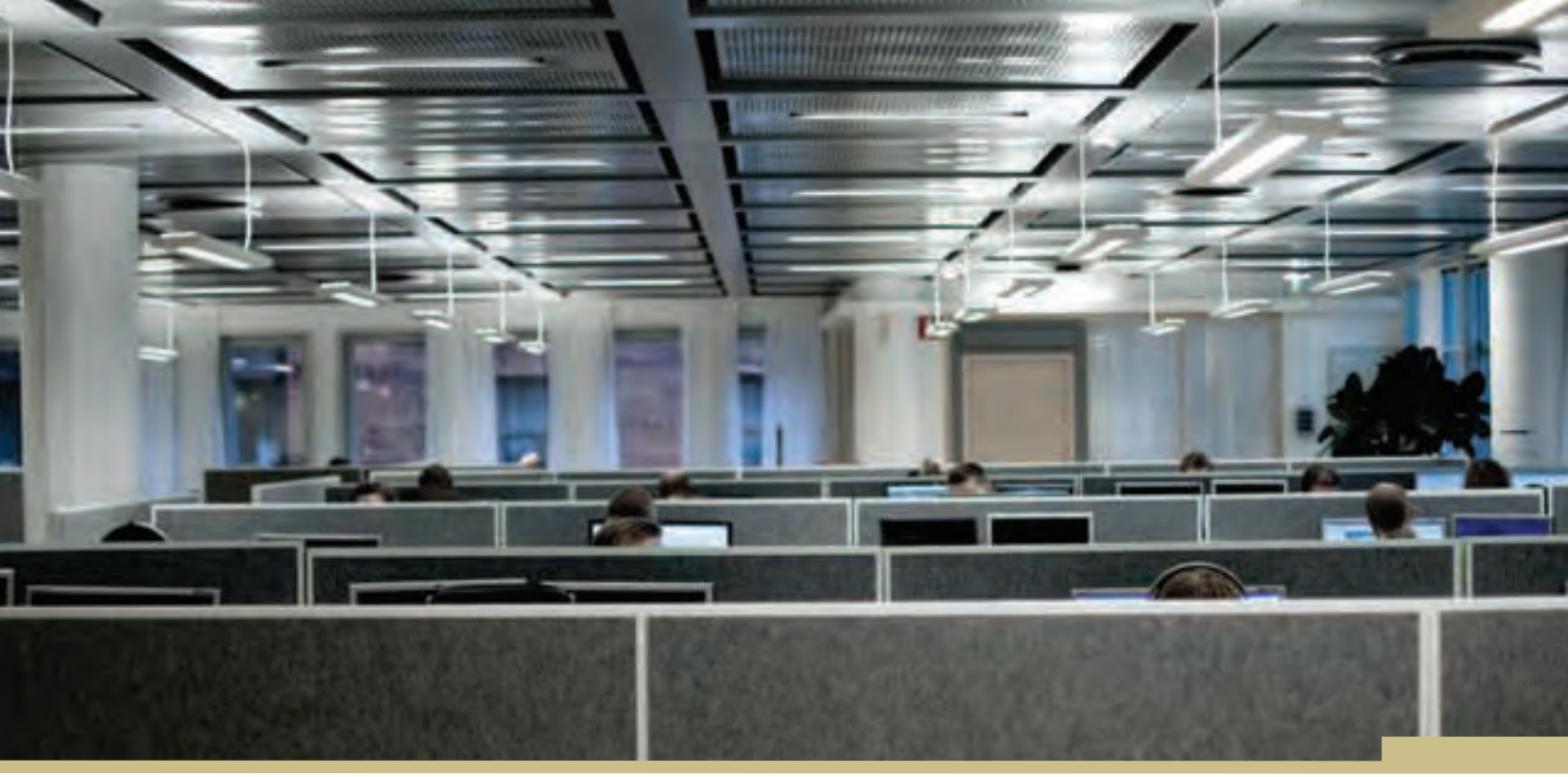
Currently, federal buildings account for 88 percent of the Government of Canada's greenhouse gas emissions. This represents an opportunity for federal-building operators and managers to take a leadership role in greenhouse gas emissions reduction. Energy-efficient technologies and processes available today are proven to reduce emissions, improve operating performance, increase occupant comfort and contribute to a cleaner environment.

Natural Resources Canada's **Federal Buildings Initiative**, through the facilitation of energy performance contracts, enables federal real-property managers and decision-makers to lead by example, undertake retrofits with no upfront capital costs and take advantage of private sector funding. The Federal Sustainable Development Strategy Theme IV, "Shrinking the Environmental Footprint – Beginning with Government," identifies the Federal Buildings Initiative as a "key mechanism to help organizations achieve their emission reduction targets."

This guide will help you plan and implement an energy performance contract. After reading it, you will be familiar with how an energy performance contract works, the factors that must be present before implementation and the typical issues that can arise during a contract's life cycle. The role of energy service companies will also be explained, and guidance will be provided on establishing and managing a mutually satisfactory arrangement.

This guide is intended to be used in conjunction with the Federal Buildings Initiative's *Model Energy Performance Contract* and *Model Request for Proposal* documents.





What is the Federal Buildings Initiative?

The Federal Buildings Initiative is an energy efficiency initiative delivered by Natural Resources Canada's Office of Energy Efficiency.

The Federal Buildings Initiative offers products and services to help you plan and implement energy performance contracts and provides opportunities to share best practices in energy management, including the following:

- opportunity assessments and facilitation services to start your retrofit project, i.e. consultation about project financing options, tendering and awarding of contracts, and project monitoring
- access to a qualified bidders list of energy service companies that can bid on federal retrofit projects
- seminars, publications, case studies, design/analysis tools and contracting support to facilitate procurement

Since 1991, the Federal Buildings Initiative has enabled the Government of Canada to lead by example, facilitating retrofits in one third of crown-owned floor area and attracting hundreds of millions of dollars in private sector investments. These projects have resulted in an impressive 15 to 20 percent energy savings on average, with some projects saving as much as 40 percent. Cumulative savings of a quarter of a billion dollars have been reinvested in programs for Canadians while reducing the impact of government operations on the environment.

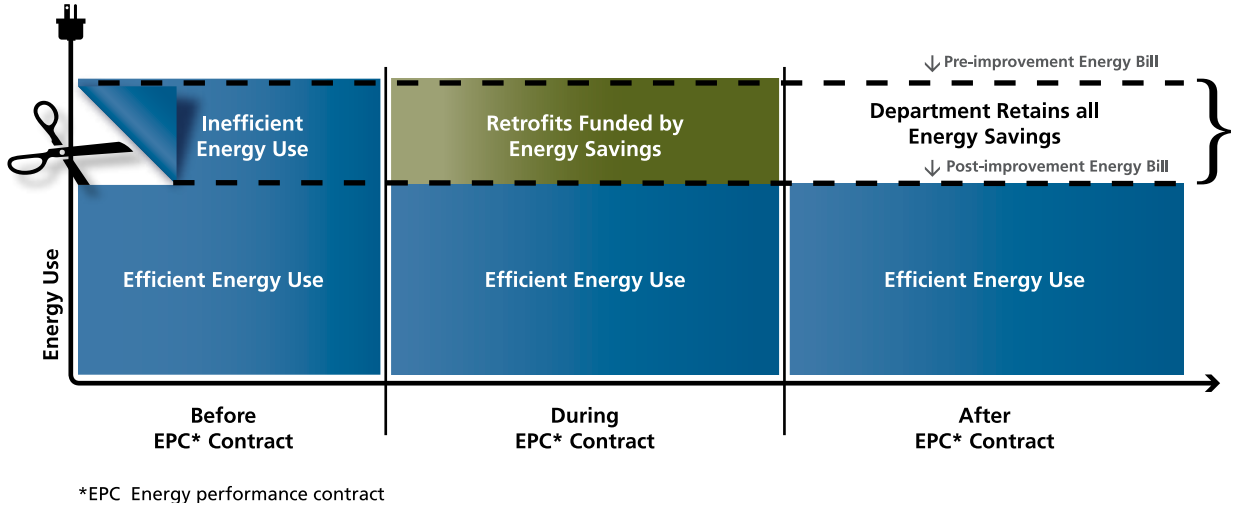
What is an energy performance contract and how does it work?

An energy performance contract is an agreement between an energy service company and a client organization that is used for energy efficiency retrofit projects. Under this agreement, an energy service company assesses a facility's energy systems and equipment, identifies possible energy savings opportunities, recommends and implements energy efficiency improvements, monitors the results, and guarantees the energy savings. The energy-saving improvements and the energy service company are paid for over a specified period from the resulting energy savings. When the payout period is over, the energy service company's services and all the improvements will have been paid for – and your organization will benefit from all future savings.

This performance-based, turnkey approach was developed to overcome barriers that prevent organizations from addressing energy-saving opportunities, including the lack of technical expertise and limited capital budgets.

Figure 1 demonstrates how money can be taken from the cost of inefficient energy use to fund retrofits in your facilities.

Figure 1. Energy performance contract funding model



*EPC Energy performance contract

Types of energy performance contracts

Federal government departments and agencies can use one of two types of energy performance contracts:

- ***First-out performance contract***. This is the most common type of energy performance contract and is often used by federal building managers. In this arrangement, the energy service company finances the project (usually in conjunction with a third-party lender). The energy service company then receives all of the savings until the project costs are paid or until the predetermined payment period expires, whichever comes first. From then on, all savings are passed on directly to the department. When estimating the full costs of a project, the energy service company must declare its investment up front, including all costs and mark-ups. Percentage margins allowed to the energy service company are fixed.
- ***Shared savings performance contract***. Under this type of contract, your organization and the energy service company agree to share the savings at an agreed-upon percentage split for a specified period. Because it takes longer to recoup the investment, the risks to the energy service company are greater, the overall costs are higher, and the contract period is substantially longer than in a first-out performance contract. The shared savings performance contract allows you to generate positive cash flow from the beginning of the project.

Benefits of an energy performance contract for federal buildings

In addition to paying for the retrofit from the energy savings, energy performance contracts offer several other advantages, such as the following:

- Energy service companies provide a turnkey service and access to private sector funding to retrofit federal buildings (one contract for services and funding).
- Energy service companies provide the engineering and energy management expertise that your organization may not have.
- Energy service companies assume the risk of achieving energy savings, thereby reducing the risk for the Government of Canada.
- Energy service companies provide training for building operating staff on new or existing equipment and systems, to ensure energy savings are maintained over time.
- Energy performance contracts allow energy-related improvements with longer paybacks (e.g. water reductions, window replacements and energy management systems) to be paid for from the savings created by improvements with shorter payback periods.

Common misconceptions about energy performance contracts

Even though energy performance contracts have been available for many years, there are still many misconceptions about how they work and when they should be used. Here are a few commonly held misconceptions:

- ***The cost of energy efficiency technology provides the biggest barrier to entry***. On the contrary, the technology's cost is not a barrier because the energy efficiency measures do more than pay for themselves. The energy savings can also provide the funding necessary to invest in state-of-the-art technology. For federal buildings, the true barriers to energy efficiency are lack of expertise and lack of capital to begin the project. An energy performance contract arranged through an energy service company removes both of these barriers.
- ***Energy performance contracts are the best solution for all retrofits***. The reality is that energy performance contracts are most relevant for projects that are large, complex and long-term. Organizations planning smaller projects that will be realized in the short term may not find these arrangements as useful. However, you can "bundle" smaller projects to create a larger project.
- ***The largest proposal offers the best value***. This statement can be correct; however, without a competent advisor to scrutinize the proposals you receive from energy service companies, it could prove false. Occasionally, proposals include deficits and higher-than-reasonable profit margins for the energy service companies. Therefore, you need to practice due diligence when assessing proposals.
- ***We are not interested in debt obligations or making loan payments for the next 8–10 years***. You have already been paying this amount (as wasted energy) through your energy costs. Energy performance contracts allow you to maximize the value of the utility payments that you are already committed to make over the same period. The significant savings can then be converted into capital.
- ***An energy performance contract is more expensive than a traditional procurement approach***. Self-managing and paying for a project from departmental funds is not necessarily less expensive than an energy performance contract when you take into account a retrofit project's life cycle. Energy performance contracts are often quicker to implement, resulting in a more rapid reduction in energy consumption. Also, the

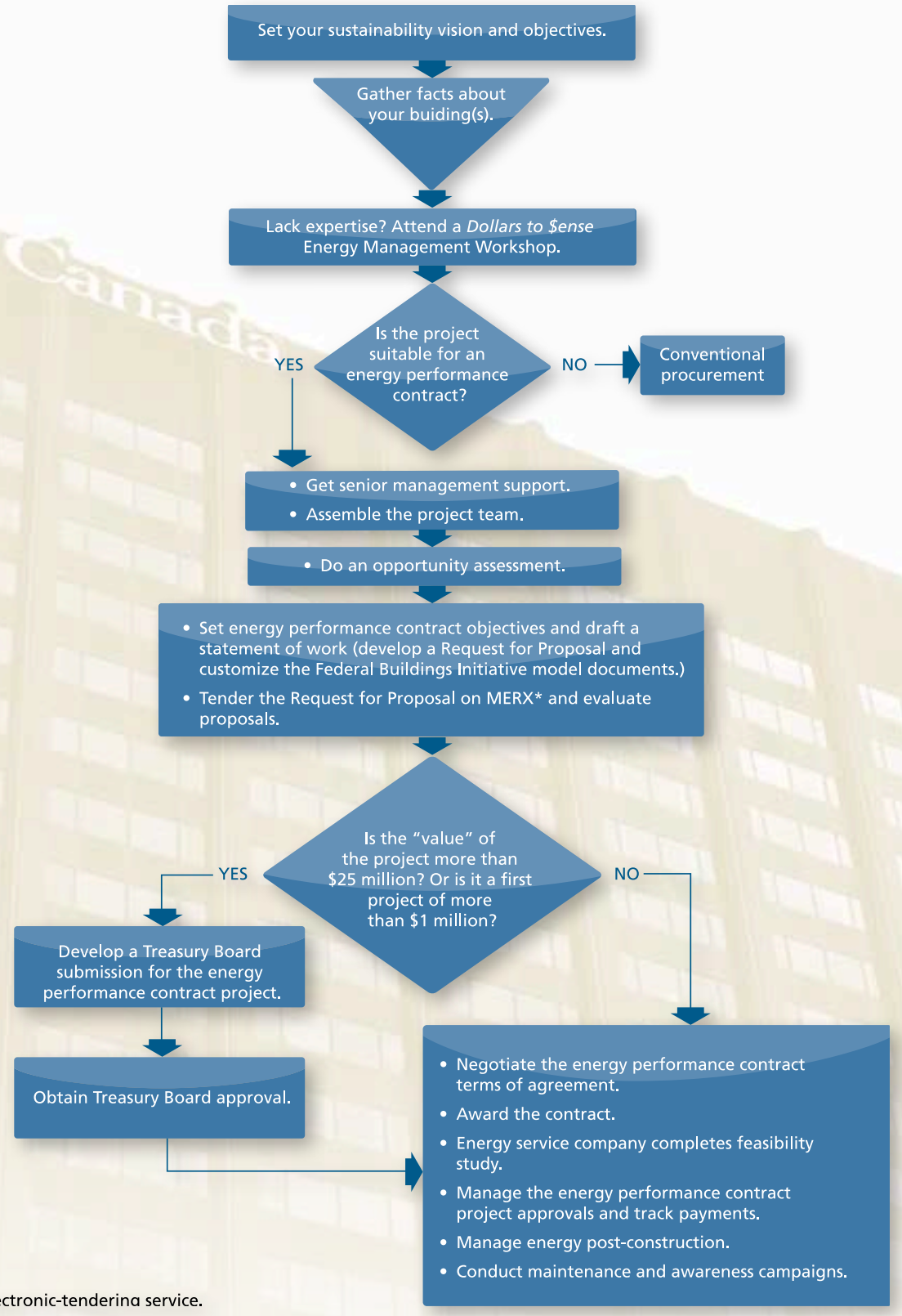
accountability of a performance guarantee and the benefit of a comprehensive approach usually result in more energy savings than does a self-managed approach.

- ***We will lose control of the retrofit if we turn it over to an energy service company***. Although the energy service company is hired to handle all aspects of the project, the company is not given a free hand to do whatever it wants. Your organization still maintains control through its ability to select and approve the energy efficiency retrofits that the energy service company suggests before the work begins. As with all contracts, due diligence is required.

Step-by-step approach to successful energy performance contracting

Figure 2 shows a step-by-step approach to guide you through the process of preparing for, implementing and monitoring an energy performance contract. Experienced facilitators from the Federal Buildings Initiative are available if you have any questions about these steps or need more information. Contact us at fbi@nrcan-rncan.gc.ca.

Figure 2. Energy performance contracting process



*MERX is Canada's electronic-tendering service.

CHAPTER 2

Step 1: Getting Started

Gather information

The first step before considering an energy performance contract is to gather information about your building(s) that will help in developing your plan and sustainability objectives. This information will give you a general idea of the retrofit potential, help build a solid business case for your project and gain support from senior management.

To start building your plan, you need a general description of your custodial buildings, such as age, size, function, type of occupancy and any other physical attributes that help you describe how your buildings operate. You also need to gather energy consumption data and utility costs for the buildings. If you can, obtain at least 24 months of utility data (electricity, fuel and water) based on your utility bills to help you develop a baseline of your buildings' energy use. Utility representatives can help you obtain this information; typically, utility companies have a designated representative who handles government accounts. This information will be important during the preliminary design stage of your project.

Benchmarking your buildings' energy performance helps establish an energy consumption baseline and identifies areas for improvement (for more information, see the Benchmarking sidebar).

If you are missing the necessary technical expertise or need more information on building or energy performance data, consider participating in the **Office of Energy Efficiency's** energy management workshops. You will find information on the *Dollars to $ense* customized workshops, at oee.nrcan.gc.ca/communities-government/buildings/federal/16541.

Benchmarking

Benchmarking helps you set investment priorities, verify efficiency improvements and reduce your carbon footprint.

By measuring how your building compares with similar buildings across Canada, you can identify poorly performing buildings and target investments to lower operating costs.

Natural Resources Canada is working with the United States Environmental Protection Agency to launch ENERGY STAR® Portfolio Manager™, a free online energy benchmarking tool, in 2013. For more information about Portfolio Manager, please visit our Energy Benchmarking site http://oee.nrcan.gc.ca/commercial/18392. To find out how you can become involved, e-mail us at info.services@nrcan.gc.ca.

Dollars to $ense Energy Management Workshops

Since 1997, more than 20 000 representatives from organizations across Canada have enrolled in *Dollars to $ense* workshops, resulting in 1 megatonne of avoided greenhouse gas emissions and $160 million in annual energy savings. There are six workshops to choose from:

- **Energy Management Planning** – This workshop shows you how to get support, identify cost-saving opportunities and prepare an implementation plan.
- **Spot the Energy Savings Opportunities** – This workshop helps you understand energy basics and identify opportunities that can help your organization save on energy use and reduce energy costs.
- **Energy Monitoring** – "You can't manage what you can't measure. "This workshop shows you how to gather and analyse utility information that you need in formalizing an energy monitoring plan to measure your energy use.
- **Energy Efficiency Financing** – This workshop helps you to calculate the financial value of energy efficiency projects and to build a business case for energy efficiency projects.
- **Energy Management Information Systems (EMIS)** – This workshop shows you how implementing an EMIS will create financial value for your organization and lay the foundation to monitor, document and report on energy performance.
- **Recommissioning for Buildings (RCx)** – This re-optimization process for existing buildings ensures that building equipment and systems are operating optimally to meet current occupant needs. This course teaches you the skills needed to launch, manage and maximize the benefits of recommissioning projects.

Helpful criteria to consider when undertaking an energy performance contract

An energy performance contract should be considered when you lack the capital to finance necessary improvements and/or lack the technical resources to implement improvements across your facilities. The ideal conditions for considering a building or a group of buildings for an energy performance contract include the following:

- annual energy bill is more than $100,000
- an opportunity assessment identifies that significant savings can be realized
- building is larger than 3700 square metres
- building's infrastructure and equipment are aging
- lighting requires upgrading
- energy used within the building is predictable and consistent
- major changes to the building or its occupancy will not occur in the foreseeable future

***NOTE:** Scientific laboratories with fume hoods can also benefit from an energy performance contract.*

- An internal management commitment is available to oversee the contract. (The project needs a primary contact person responsible to the Crown with the authority to make decisions and articulate the needs of the Crown.)

Obtain senior management support

Because you will need senior management approval throughout the project, it makes sense to involve them from the start. After you have developed a preliminary plan of action, reviewed the criteria and decided to use an energy performance contract for your organization's energy efficiency retrofit, it is crucial to get the support of senior and key decision-makers (Chief Financial Officer, Senior Counsel, Assistant Deputy Minister, Real Property Manager, Procurement Officer and Contracting Manager) before moving beyond the exploratory stage.

Introduce these decision-makers to the concepts, benefits and limitations of energy service companies and energy performance contracts. The *Dollars to $ense* Energy Efficiency Financing workshop is a good tool to help build the business case for energy efficiency options and demonstrate the value to senior management. Consider asking a third-party facilitator (the Federal Buildings Initiative can provide one) to make a formal presentation on the types of arrangements open to your organization and to follow up with the importance of completing an opportunity assessment.

Assemble the project team

Having the right people on your team helps guarantee a successful project. Identify a project manager who will take an active interest in the project and has the authority to make decisions. The project manager should be supported by a team of key personnel responsible for managing, operating and maintaining the building(s).

The team should also bring in representatives from finance, human resources, communications, procurement and legal resources at the beginning and when there is a requirement for their input. If your building(s) is/are operated by Public Works and Government Services Canada or a third party building operator, include its representatives on the team.

The project team's responsibilities include the following:

- **technical expertise:** providing background information and operational data on the building, helping to develop technical specifications, evaluating proposals and working with the energy service company to oversee implementation
- **financial expertise:** evaluating the financial provisions of the options under review and determining the payment and accounting implications
- **legal expertise:** helping to draft and negotiate the terms of the energy performance contract and to review the Request for Proposal
- **communications expertise:** drafting a communications plan to inform employees about the project and engage them
- **procurement expertise:** reviewing the Request for Proposal and associated documentation that need to be posted on the MERX electronic bidding service as part of the tendering process to select the energy service company
- **project management expertise:** overseeing the project team and the energy performance contract; the project manager must have the authority to make decisions
- **Public Works and Government Services Canada expertise:** representing building(s) that Public Works and Government Services Canada owns or operates

- **third-party service provider expertise:** representing the third-party provider of operations and maintenance services

You will want the project team's knowledge and expertise to assist the project manager when it comes time to develop and issue the Request for Proposal to attract submissions from energy service companies. The project team's role is to help prepare the rating criteria for evaluating the proposals, organize bidders' meetings and/or site tours, rate the proposals and review the energy performance contract. The project team will also play a valuable role in reviewing feasibility studies and specific measures implemented.

Opportunity assessment

Sometimes called a preliminary audit, the opportunity assessment includes inventories of energy-using equipment, a basic analysis of energy consumption and a set of recommended measures. It offers a brief initial evaluation of a building's or group of buildings' potential for energy efficiency improvements. Energy records and energy consumption patterns are analysed, supported by a walk-through audit and/or review of available documentation, including the following:

- a summary of the energy cost savings
- implementation costs for improvements
- estimated payback periods
- recommended energy efficiency measures

An opportunity assessment could also identify applicable utility programs, highlighting incentives for certain technologies or rebates for demand or consumption reductions.

To assist with this assessment, the Federal Buildings Initiative provides guidelines for opportunity assessments, including sample forms, worksheets and graphs that you can use for data collection. Contact the Federal Buildings Initiative at fbi@nrcan-rncan.gc.ca for more information. Your local utility companies might also provide assistance with this assessment.

In some cases, an energy performance contract addresses only a portion of the building area that the utility meters cover. If so, a special submetering must be installed to separate the areas and activities beyond the scope of the energy performance contract. Specific clauses can be included in a Request for Proposal, whereby your organization acknowledges that baseline energy use cannot be established and instructs the bidders to offer solutions or methodologies to create the baseline. After the winning energy service company has completed this task, and you, as the client, agree with the methodology and proposed baseline energy use, this baseline becomes the benchmark used to compare and identify the energy savings of the retrofits installed by the energy service company.

Build the business case

It is important to build a business case for using an energy performance contract for your project. (The *Dollars to $ense* Energy Efficiency Financing workshop can help your organization develop a business case.) You may be tempted to take a self-directed approach and make only the improvements that have a quick payback. However, this is not always the best approach, because the savings for quick payback measures are often quickly absorbed by an organization, making it harder to address the larger and more costly measures.

An energy performance contract is a practical way to tackle complex energy efficiency retrofits in federal buildings. Through this arrangement, the energy service company provides the technical expertise and capital funding. An energy performance contract allows you to leverage quick payback

measures to cover the costs of longer payback measures. Clearly, having a plan to handle all the measures comprehensively, covered by the energy performance contract, will save more energy and money for your organization over the long term. Speed and size of the retrofit are crucial for energy efficiency measures. The more energy you save and the faster you can implement energy efficiency measures, the better!

Set your energy performance contract objectives

Before moving forward, your project team should establish the following objectives for the project:

- **Length of the contract:** What will be the length of the contract? This can be determined partly by the opportunity assessment. However, build flexibility into the contract to account for the many factors affecting project overhead costs (e.g. interest rates, financing costs, performance guarantees, inspection and training, project management, and utility bill analysis). Account for these overhead costs in the planning stages of the energy performance contract and consider them in the length of the contract, in terms of extra time for possible delays.
- **Amount of risk to be taken on by the energy service company:** Some improvements have more certain energy results than others. Will this project require long-term monitoring and service, or can energy savings be proven by simple one-time tests? A more complex project will entail more risk for the energy service company and a larger performance guarantee premium. To efficiently manage this risk, the Federal Buildings Initiative's *Model Energy Performance Contract* contains a proof-of-savings period. In this shortened period, the energy service company must prove that projected levels of energy savings have been met. The savings at this point are considered an accurate measure of the savings for the remainder of the contract.

Performance guarantee

The energy service company guarantees the energy savings set out in the schedule of savings. These savings will, as a minimum, cover the costs of the project.

The energy service company will absorb the sum of any outstanding project balance shortfall at the end of the contract term.

- **Measures to be included and excluded:** As a project team, you need to consider what improvements you wish to include in your energy performance contract. Some of the measures may be desirable for reasons other than energy efficiency alone and should be included. Others may need to be postponed, perhaps as a result of a change in occupancy or a change in mandate.
- **Commitment to administer the project:** For the project to be successful, you have to spend time deciding how the project will be administered. Ensure that energy service company relations will be handled by a person high enough in the organization to have the authority to call in engineering help to review plans, designs, commissioning reports and proof-of-savings statements. This person should also have access to contract management and legal advice.
- **Energy savings goals:** Does your organization have any specific energy savings goals in addition to Federal Sustainable Development Strategy targets?

Project complexity and risk assessment

Project complexity and risk assessment is mandatory under the Treasury Board policies on investment planning and the management of projects. The Public Works and Government Services *Canada Project Complexity and Risk Assessment Manual* ensures that project complexity and risk assessments are performed consistently across the federal government. This manual is to be used for all projects as follows:

- All real property capital asset and space projects, including lease projects, have more than $1 million in total value, including GST/HST and excluding client costs, if applicable.
  Note: For real property lease projects, the $1-million threshold is based on lease project approval values.
- All Public Works and Government Services Canada business projects – information technology-enabled – have a planned value of $1 million or more.
- At the discretion of the department, non-routine initiatives with characteristics similar to a project may also require a project complexity and risk assessment.

For more information, visit Treasury Board's Web site at www.tpsgc-pwgsc.gc.ca/biens-property/sngp-npms/pcra-ecrp/intro-eng.html.

CHAPTER 3

Step 2: Selecting an Energy Service Company

After you have decided to pursue an energy performance contract, the next step is to develop and issue a Request for Proposal, which will be posted on the MERX service. A Request for Proposal is issued at an early stage in the procurement process, inviting energy service companies, through the MERX bidding process, to submit proposals offering their services. The Request for Proposal is your primary tool for selecting an energy service company for your project – one that matches the size and scope of your retrofit and has all the services needed to complete your project successfully. The ideal energy service company offers experience and value where you want it most.

The Federal Buildings Initiative provides model documents for the Request for Proposal and the energy performance contract that your project team can customize to help you find the energy service company that best matches your project. Contact the Federal Buildings Initiative for more details and to receive these documents.

How to find an energy service company

Federal Buildings Initiative – The Federal Buildings Initiative maintains a list of qualified energy service companies (Qualified Bidders List) that can provide energy management services to the Government of Canada. This list ensures that energy service companies that bid on federal energy performance contract projects meet the prequalification requirements for technical expertise and financial viability. For more information, visit oee.nrcan.gc.ca/communities-government/buildings/federal/10696.

MERX Canadian Public Tenders service – MERX is the federal government's approved national electronic bidding and information service (operated by Public Works and Government Services Canada). The service is provided under contract to supplier subscribers, which affords them access to all government and private sector procurement opportunities. For more information on MERX, visit www.merx.com.

Develop the Request for Proposal and supporting documents

To ensure a fair and competitive process, the project team develops a formal Request for Proposal (the Federal Buildings Initiative has a *Model Request for Proposal*). The Request for Proposal includes supporting tendering documents, such as a statement of work and an energy performance contract (the Federal Buildings Initiative's *Model Energy Performance Contract* can help you develop this). The Request for Proposal also includes a copy of the opportunity assessment (developed in Step 1) and any recent energy management studies or analysis done on the building(s).

The Federal Buildings Initiative's *Model Request for Proposal* may be helpful as you prepare these documents for tender.

The Request for Proposal provides the following information:

- description of the building(s) (i.e. age, size, function) and the types of improvements and services required (in general terms)
- data on the building(s) and any standard assumptions (e.g. energy prices) when calculating financial projections
- when multiple buildings need retrofitting, an indication of whether you are using a test building on which to base future assessments
- rated criteria for evaluating the proposal
- a standard format for proposal submissions, to facilitate comparisons and evaluation
- a timetable for submissions (usually a minimum of 40 calendar days on MERX)
- a schedule for implementing the improvements
- the date and location(s) of the site visit(s)

Your Request for Proposal must include mandatory rated criteria. Mandatory rated criteria are a minimum set of specific and objective criteria that all applicants must meet before they are invited to bid on the contract. Make the mandatory rated criteria clear and easy to understand. These criteria will help bidders submit complete and competitive proposals and help your organization's project team evaluate proposals. Rated criteria can include

- financial merit
- technical merit
- implementation approach
- operation and maintenance approach
- project management approach
- training and awareness approach
- performance measurement and verification approach

Tip: To shorten the time for bid preparation and proposal evaluation, place scoring emphasis on energy service company qualifications and general procedures, as well as on the attention paid to your stated concerns, rather than on specific proposed improvements. As you evaluate proposals, also consider the energy service company's procurement abilities. If the energy service company is a supplier of goods or services to be used in construction of your project, or has a corporate interest in such a firm, you could receive better pricing for the project.

Internal approval of tendering documents

Everyone involved in the project must accept and understand the documents for tendering. The project team should develop a communications plan to facilitate the process and ensure that financial, procurement, legal and all other project staff are familiar with the project and the model documents at this stage.

Tender your energy performance contract

Issuing the Request for Proposal (including associated documents and the statement of work) should follow normal tendering procedures for your organization. The following tips may also help you with this process:

- Send your Request for Proposal and associated documents, such as a statement of work and the draft energy performance contract, to your organization's procurement office for review and approval. This practice will ensure that your Request for Proposal is robust and meets federal tendering procedures and guidelines.
- After the finalized Request for Proposal has been sent to MERX, complete your preparations for the scheduled site visit(s) for all potential bidders, where they will visit the test building(s) at the same time and have the opportunity to ask general questions. Your organization's procurement officer must be present to oversee this visit. Your building operators must also attend, to answer any technical questions about your test building(s). This "hands-on" information session is essential for informed bid proposals. For multi-building projects, a representative selection of buildings could satisfy this requirement. In preparation for the site visit, you should have, as a minimum, a copy of the following documents ready for the potential bidders:
  - utility data
  - basic building drawings
  - previous reports and audits

Create a review committee

Form a proposal review committee composed of the key individuals on your project team who will be involved in the contract's administration, including engineering and building operators, to evaluate the technical aspects of the measures proposed by the energy service company. You may also want to consult a financial analyst, a lawyer in your organization, an analyst from the Treasury Board of Canada Secretariat, and your organization's Director of Real Property and Director of Technical Services.

Evaluate proposals from bidders

You can expect that the proposals received from energy service companies will vary in the projected energy savings and types of improvements proposed. Appendix 2 of this guide provides general criteria to look for as you evaluate the energy service company proposals. The Federal Buildings Initiative also

provides a suggested scoring system (in the *Model Request for Proposal*), which you should review to see if it matches your needs. If not, it can still provide a good starting point for you to create your own evaluation system. Whether you use the Federal Buildings Initiative's scoring system or your own or some combination of the two, the goal is to assess the energy service companies to select the one with the expertise and approach that best meets your rated criteria for the best price.

Select the winning proposal: The pre-selection interview

Before final selection of the winning energy service company proposal, the review committee may want to meet with the first-choice bidder, if not the top two or three. This meeting should focus on assessing the individuals who will be assigned to the project and how they will work with your team. A positive working relationship between the energy service company staff and your project team is crucial to the project's success. Plan at least one hour for each meeting, plus any time you think may be needed to answer questions about the proposal. You might also plan for your project manager (and possibly other members of your project team) to visit the energy service company's office before final selection.

- Before the interview, ask the energy service company's project manager and project engineer (if they are two individuals) to attend. During the interview, ask them to speak about their experience in general, as well as the specifics of your project. When the interview process is complete, and the desired outcomes achieved, you should be ready to select the energy service company for your project.

The desired outcomes for this interview are as follows:

- to give technical people on your committee an opportunity to ask questions about typical or hypothetical improvement ideas and how the energy service company would handle them
- to determine the process and have the opportunity to ask questions about subcontracting procedures and project-reporting methods
- to assess the experience and preparedness of the individuals you will be working with

CHAPTER 4

Step 3: Awarding the Contract

Although final selection of the winning proposal may be complete, the project does not begin until a contract has been signed.

Note that after the contract has been signed, the energy efficiency improvements specified in the proposal may need to be altered. These changes are common because finalizing energy efficiency measures requires the consideration of many factors that cannot be accounted for in a speculative proposal. You could even ask the energy service company to consider measures offered in other proposals.

During final negotiations and the contract-awarding stage, the energy service company may be anxious to begin a detailed study. Such advance work might accelerate the realization of savings and benefits. Consult with your legal department before signing any letter of intent.

After you have selected the winning energy service company, you must notify the other bidders and seek Treasury Board approval, if you have not already done so.

Plan internal resources requirements

Although the energy service company covers all direct project costs, you still need to plan and budget for personnel to perform internal duties related to implementing the retrofits. These tasks could include access and accompaniment, security, evaluation and approval of measures, and verification of the installed measures. Also, have a contingency fund in case of unexpected events or findings that are not covered within the scope of the contract.

Notify unsuccessful bidders

Notify unsuccessful bidders as soon as possible after the committee has selected the top-ranked proposal. You may have to turn to your second-ranked firm if negotiations with your first choice fail. Therefore, the wording of the notification to unsuccessful bidders should be approved by your legal department. Keep comprehensive meeting and evaluation notes of the energy service companies so they can be briefed on why they were not selected.

Submit and manage the Treasury Board submission

If a Treasury Board submission is required to undertake your project (for more information, see sidebar), ensure that the submission is on the agenda of the next Treasury Board meeting. Because priority matters may force rescheduling of your submission, keep in touch with your Treasury Board analyst about the status of your submission. Have financial personnel in your organization review the draft submission. Also have your organization's appointed liaison with the Treasury Board Program Branch

read it. The Federal Buildings Initiative will provide a model Treasury Board submission form, if required. Keep in mind that during the summer, the Treasury Board meets only once every two months. Following the Treasury Board meeting, try to obtain verbal confirmation of approval from your analyst, because it can take up to a month for written approval.

Treasury Board approval

Treasury Board approval is required for a department's first energy management project in excess of $1 million and for all projects up to $25 million. The energy management project cannot exceed $25 million. To seek approval, prepare a Treasury Board submission.

Appendix O

Appendix O, *Federal Buildings Initiative – Energy Management*, of the Treasury Board's Contracting Policy states that "departments have contract entry authority needed to enter into agreements with utility companies and the private sector to make energy efficiency improvements to federal buildings."

For more information, visit the Treasury Board Web site at www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=14494&section=text#appO.

Prepare a minister's briefing note

Due to the scope of a retrofit project, a minister's briefing note is required for energy performance contracts. This note should explain the reasons for seeking Treasury Board approval under the Federal Buildings Initiative. If the minister and staff are not familiar with the Federal Buildings Initiative and energy performance contracts, the process must be explained (by the project team, via the briefing note), before seeking approval of your project.

Energy service company completes the feasibility study

First, your organization requires a legally binding instrument, like a task authorization (for more information, see sidebar) or letter of intent, to authorize the energy service company to complete a feasibility study. The feasibility study verifies the site information provided by the opportunity assessment and confirms the viability of the energy efficiency improvements outlined in the energy service company's proposal.

Task authorizations are structured administrative tools enabling you to authorize work by a contractor on an "as and when requested" basis in accordance with the conditions of the contract. Task authorizations are not individual contracts.

At a minimum, the feasibility study includes the following activities:

- physical inspection of the design and condition of all energy systems
- measurement of airflow rates, combustion efficiency and other variables
- review of standards of service and comfort, e.g. temperature and air quality required by building occupants, and a comparison of existing conditions with these standards
- analysis of energy-use patterns
- use of computerized simulation models, as required

After completing the feasibility study, the energy service company will provide you with a report summarizing its findings and recommending a comprehensive set of system improvements and related activities, such as training and monitoring.

The energy savings forecasted following the feasibility study must approximate the savings (at least 90 percent) that the energy service company initially proposed. If the results of the study are less attractive than the results originally proposed, you could seek contract renegotiation or withdrawal. The energy service company could also retain the right to terminate the contract at the end of the feasibility study phase if it finds that the forecast energy savings do not cover the project's overall costs.

Refine the contract based on the results of the feasibility study

Because you had included the tendering documents and the Request for Proposal with your draft energy performance contract, there will likely be only a few changes to the final contract. However, the energy service company could have proposed adjustments that you would like to include in your retrofit.
After you have received Treasury Board approval, if required, begin negotiations on the final contract (again, the Federal Buildings Initiative's *Model Energy Performance Contract* may be useful during this process). Obtain the advice of departmental lawyers on the contract and any adjustments proposed by the energy service company. Remember, the individuals negotiating the contract must have the appropriate authority.

The final energy performance contract includes the following information (see the Federal Buildings Initiative's *Model Energy Performance Contract* for more information):

- a list of energy-saving improvements
- a project implementation schedule
- details of third-party financing (letter of assignment)
- proposed baseline and savings calculation methodology
- clarification of the procedure for baseline adjustment
- data on the quantity and value of projected energy savings
- details of the payment schedule and any guarantees
- clarification of energy service company fees and the mark-up structure
- a dispute resolution mechanism (e.g. binding arbitration)
- insurance
- equipment ownership
- a recommissioning plan
- a monitoring and verification plan

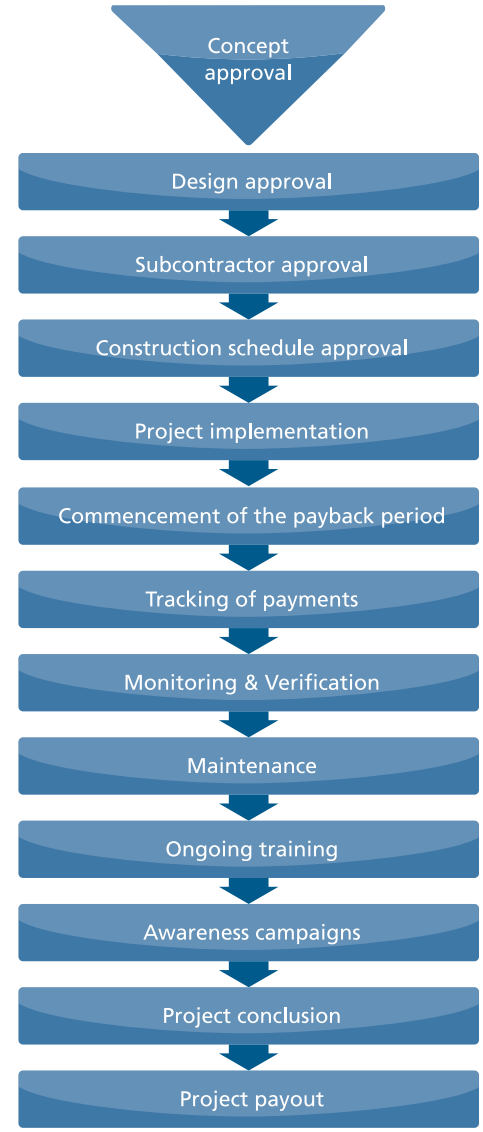
CHAPTER 5

Step 4: Managing the Contract

Responsibilities during the energy performance contract

After the energy performance contract has been signed, the energy service company will conduct most of the remaining activity. However, your organization, through the project manager, is ultimately in control of the project through its right to approve concepts, designs, completion of measures and savings claims. Because delays represent lost savings to the energy service company, be prepared to respond quickly to the energy service company's requests for approval. You may want to consider using task authorizations (see page 18) to manage responsibilities throughout the contract period. Figure 3 outlines your organization's responsibilities.

Figure 3. Your organization's responsibilities during the energy performance contract



Concept approval

During this stage of the project, your project team discusses *all* the implications of an energy efficiency improvement with the energy service company before granting approval of the concept. As well, the team ensures that the concept is understood and accepted by the occupants, operations and maintenance staff, financial officers, and engineering personnel responsible for the building.

Each concept presentation by the energy service company covers the impact on the following:

- ongoing occupant comfort
- indoor air quality
- flexibility for occupant operations
- construction effects on occupants and operations
- life safety systems
- the environment with respect to construction activities or long-term building effluents
- the current capacities of all mechanical systems
- the life of existing equipment and proposed new equipment
- operating methods and the type of skills required by operating staff
- maintenance methods and the type of skills required by maintenance staff
- non-energy costs of operations and maintenance
- future fuelling options if utility price structures change dramatically
- removal of hazardous waste (if applicable)

The concept presentation also defines the following:

- how close the proposed changes bring the building to state-of-the-art energy efficiency
- precisely how savings will be proven, if not by utility meters
- maintenance requirements by the energy service company for a retrofit measure
- the training needed for each retrofit measure, where applicable
- deferred maintenance that must be corrected to allow a measure to proceed, and how much of the work the energy service company will do; an estimation of the expected costs for your organization
- procedures that will be followed to satisfy both the energy service company and the project team that the equipment is working properly after it has been installed
- the schedule for the design and construction of a retrofit measure

Design approval

This stage of the project follows approval of the concept and is where the energy service company asks you to approve the design of the retrofit measure. During this stage, the energy service company must show all the equipment specifications and the installation layout. If the project team thinks it needs equipment that is more expensive than that proposed by the energy service company, it will have to negotiate to determine how these extra costs will be met. For example, will the energy service company require additional funding from your organization or can these measures be paid for out of the savings stream?

Subcontractor approval

Energy service companies hire subcontractors to help implement the retrofit measures. The energy service company has ultimate responsibility for hiring the subcontractors, because it guarantees to pay costs regardless of savings achieved. You should not expect to approve each subcontractor on an individual basis. Instead, you should approve a list of subcontractors that can be considered for the work. Also ensure

that all subcontractors are adequately bonded and have appropriate security clearances. Because costs are openly charged to the project under the Federal Buildings Initiative's *Model Energy Performance Contract*, you can inspect the costs and determine whether you think that good value is being obtained. However, direct control of project costs is the energy service company's function and is not a matter for public scrutiny.

Construction schedule approval

Ensure that the energy service company makes the project team aware of and informed about construction scheduling, to minimize disruption of normal operations. Ask the energy service company to try to schedule construction such that no part of the building is out of service for an undue period. Though occupants have been involved in the concept approval, you need to inform them when the work will be performed on site and exactly what kind of disruption to expect. It is crucial for you to receive adequate notice of all activities planned by the energy service company. As a best practice, you may require weekly detailed construction-schedule reviews with the energy service company, especially if many activities occur simultaneously.

Project implementation

After you have accepted the feasibility study and the final recommended set of improvements, the energy service company commences work. Installing approved energy efficiency improvements can take up to a year, depending on the project's complexity.

The project implementation phase follows an agreed-to schedule that covers the following:

- implementing operational changes
- acquiring and installing equipment
- accessing utility incentives
- implementing energy measurement and verification procedures, which must be consistent with the latest edition of the International Performance Measurement and Verification Protocol (for more information, see www.evo-world.org)
- establishing training for building managers and staff
- creating an employee energy efficiency awareness program (for more information, see page 25)

Although project delays are inevitable, you can implement several activities to keep the project running smoothly. After the construction of each improvement is complete, you should

- have your own technical experts on-site while commissioning is conducted
- receive a commissioning report that verifies that the energy service company has met the design intent outlined in the concept presentation
- receive a written report from the energy service company, outlining operations and maintenance procedures
- have all current building staff receive appropriate training
- receive "as-built" design documents from the energy service company
- receive all required permits, inspection reports, equipment manuals and documentation from the energy service company
- sign a statement of acceptance of the retrofit measure (depending on the terms of the energy performance contract and the measure, this acceptance may also transfer ownership and responsibility for maintenance to your organization)

Commencement of the payback period

After all or a predetermined set of measures have been completed, the energy service company presents a notice of the commencement date for the payback period. Before your project team approves this notice, it ensures that all energy efficiency improvements have been substantially completed. Commencing payback after individual measures are completed, instead of waiting for completion of the entire project, can reduce financing costs and the overall payback term.

Annual reconciliation report

The energy service company reviews the energy performance contract at the end of the first year of operation, following the commissioning of all energy efficiency improvements. The annual reconciliation report follows up on any changes or modifications that took place during the year.

By mutual consent, the energy service company estimates the effect of any changes in occupancy, personnel, building use and times of operation, for example, and their impact on energy consumption. The energy service company makes any corrective adjustments to the energy performance contract and the payment schedule at this time.

Beyond this review, you need to have a mechanism in place to adjust the energy baseline of the building(s) to reflect any new condition that could affect energy consumption.

Track payments

During the contract period, establish and maintain a ledger or project account to track the payments against reports made by the energy service company. The financial expert on the project team, who was identified to track these payments, also incorporates them in the organization's internal financial management system. Specialized software is available to assist with this tracking (contact the Federal Buildings Initiative for additional information about software). The payment amounts made to the energy service company for the installed energy efficiency retrofits are identified in the schedule of savings. The energy service company is paid based on energy savings achieved as a result of the installed energy efficiency retrofits. Once every 12 months, the energy service company prepares a savings reconciliation report, updating the actual energy savings from the forecasted energy savings. The report includes an updated schedule of savings that identifies the payments to the energy service company for the next 12 months.

Post-implementation payments

After the payments for the energy performance contract's total project costs are complete, payments to the energy service company cease! Your organization can now begin to reap the long-term energy savings and benefits of the project. These benefits are reduced energy consumption (and costs), as well as benefits from the project's technical and operational improvements.

Ongoing training

Training is a critical factor for a successful project. In addition to training building operators to operate and maintain the new systems, the project could involve upgrading their knowledge on operating and maintaining existing building systems affected by the retrofit.

During the contract period, develop a training plan based on an assessment of the impact of the new systems/retrofits on the building environment. The plan covers the following:

- general on- and/or off-site training by equipment manufacturers for building operators
- energy service company-run training workshops to review operating and maintenance philosophies and techniques for all equipment in the building(s)
- regular contact between the energy service company and building staff throughout the life of the energy performance contract, to ensure that staff understands proper energy-efficient practices

The energy service company is responsible for supplying information to support staff training. This information includes the following:

- descriptions of the intent of each improvement and energy savings
- descriptions and documentation of the equipment involved
- instruction on how to maintain normal operations
- suggested responses to potential problems

Focus on training throughout the payback period, to ensure that proper energy efficiency practices will become fully integrated into your organization's operations by the end of this period. After the payback period, train new staff using the methods and resources from the training plan.

Awareness campaign

Developing and implementing an awareness campaign is crucial to your project's overall success. To become truly energy-efficient, your organization needs to change the way that employees respond to

the technologies you adopt and to establish internal policies and procedures. These changes don't have to be drastic or costly, but no single change can deliver maximum savings. Benefits are maximized when you implement technical, behavioural and organizational changes simultaneously with support from senior management. Make your energy efficiency awareness program part of your organization's management best practices. As such, it will become an integrated, organization-wide effort that involves making business decisions about equipment, establishing procedures that ensure greater energy and process efficiency, and encouraging behaviours that save energy and money.

Keep building tenants and staff informed about the project and its implications on building operations and maintenance. For example, communicate with them about any service interruptions or disruptions. In addition, involve staff and occupants in finding ways to reduce their own impact on the environment. Keep them informed about what their organization is doing in response to the Government of Canada's commitment to reducing greenhouse gas emissions. Ultimately, this is a good news story, and the benefits to staff, the organization and the federal government should be shared.

The project team should develop an awareness program that includes a range of information, tools and products. For more information on how your organization can develop an energy efficiency awareness program, see sidebar.

For information about how to develop an energy awareness program, see Natural Resources Canada's Office of Energy Efficiency's *implementing an ENERGY EFFICIENCY AWARENESS PROGRAM* at www.oee.nrcan.gc.ca/sites/oee.nrcan.gc.ca/files/files/pdf/publications/commercial/Awareness_Program_e.pdf.

Reporting, measurement and verification, and maintenance during the contract period

Although monitoring and verification information is required to verify and track the payments during the energy performance contract contract, you should continue reporting this data and the monitoring and verification of actual energy savings and cost avoidance after the energy performance contract has been paid out. During the energy performance contract period, the energy service company has a vested interest in ensuring that the forecasted energy savings are achieved.

Reporting should include the following key information:

- anticipated date of retirement of debt or energy performance contract completion identified in the schedule of savings
- savings over the last reporting period and the last 12 months
- extra information appropriate to maintaining the awareness of your project team and the building tenant(s) (during the design and construction period):
  - the list of planned or approved energy efficiency improvements, annotated to show when a concept and design has been approved, and the retrofit measure completed
  - the expected date for completion of all improvements
  - the annual savings target based on the latest analysis
  - outlines of notices of irregularity that the energy service company had submitted to you during the period, which would result in a reduction of the anticipated energy savings, as indicated in the schedule of savings, due to equipment malfunction or failure

- outlines of baseline adjustments from the baseline energy consumption or demand that the energy service company proposed and you agreed to during this period
- current interest rate for the financing charges, as well as the number of months remaining in the term of any current loan from an outside financing source
- any changes of energy service company project-team members

The frequency of reports from the energy service company depends on the stage of the project:

- monthly reports: design and construction period
- quarterly reports: first year after construction
- annual or semi-annual reporting (in most cases): after the first year post-construction until the proof of savings period is complete

Based on the energy service company reports, the project team prepares routine summary reports for your organization's management team. These reports include the following:

- the total annual savings rate that the organization will gain when the energy performance contract is complete
- the impact on building operations
- anecdotal evidence of staff morale
- occupant reactions to the improvements

Consider creating a dashboard to convey this information (for more information, see the text box).

Dashboard

A dashboard is a visual display of the most important criteria needed to achieve one or more objectives. It fits on a single computer screen, so you can monitor it at a glance.

CHAPTER 6

Step 5: Maintaining the Savings after the Energy Performance Contract Project is Finished

After completing the energy performance contract, continue the operations and maintenance procedures established during the contract period. Otherwise, there is a serious risk of the energy savings eroding over time. Figure 4 illustrates what your organization must do to maintain the energy savings. Also, consider maintaining the momentum with employee awareness training and communication initiatives, which will help to maintain savings through employee behaviour modifications.

Figure 4. Maintaining the savings

Tracking energy use

By tracking energy data over time, facility managers and building operators can investigate and monitor energy use. The energy service company may have offered a stand–alone service or advised your organization on where to obtain an appropriate software or service. Savings reports for the first year after project completion should compare current energy use to that of the last year of the project.

Every two years, the baseline energy consumption and demand values should be updated, to ensure that comparison is always done with the previous year's measurement and verification annual report. This allows for analysis of any irregularities in energy use patterns.

Operations and maintenance standards

The project team clearly communicates any changes to the use of the building(s) and its operations and maintenance processes to the energy service company, because these changes will have an impact on the anticipated guaranteed energy savings.

Commissioning

When the energy efficiency improvements have been implemented, the energy service company commissions the building(s) to ensure that all systems are functioning as intended. After the contract is complete, the organization conducts periodic recommissioning to ensure the persistence of the energy efficiency improvements that have been implemented. This stage prevents a building's systems functioning from degrading and maintains commissioning benefits.

Other improvements

Review the original opportunity assessment and initially proposed improvements to identify any potential improvements that have not been implemented yet for possible inclusion.

Commissioning

Often overlooked, commissioning is an intensive quality assurance process applied during design, construction, occupation and ongoing operation.

Through testing, verification and training, commissioning ensures that a building's systems and equipment are installed and functioning as intended.

CHAPTER 7

Considerations

Throughout the life of an energy performance contract, a number of other items will require your attention.

Notices of irregularity

Notices of irregularity, as they are termed in the Federal Buildings Initiative's *Model Energy Performance Contract*, occur when the energy service company advises you of a situation where the equipment or systems in the building(s) are not being operated or maintained as installed by the energy service company. You must take action to ensure that operators are properly operating and maintaining the new equipment to ensure energy savings.

Base year adjustments

At any time in the life of the contract, the energy service company may determine that your organization has modified conditions from those in the base year. These modifications could range from an increase in the quantity of personal computers to a major addition to the building. They could also involve the extension of occupancy periods. Such factors erode the basis for energy savings agreed upon in the contract and therefore necessitate adjustments.

These base year adjustments will involve an engineering estimate to determine the impact on the energy savings. You need to ensure that the change occurred as indicated and that the engineering calculations are reasonable. An engineer representing your organization should verify the calculations.

After this verification, inform the energy service company about factors reducing the energy savings in a permanent way. However, the energy service company should produce a reconciliation report when it requests that you quantify such energy savings reductions.

Any large building usually undergoes some changes each year that could be the subject of base year adjustments. Because each adjustment takes some effort to quantify and evaluate, it is usually wise to batch several adjustments together and consider them all at the same time, on an annual basis. Nevertheless, because you do not want any significant unforeseen expenses, you should encourage presenting notable adjustments to the base year as soon as they are recognized.

Utility price fluctuations

The Federal Buildings Initiative's *Model Energy Performance Contract* has a provision that protects the energy service company's investment in the project against a drop in utility prices. You need to include this provision in your energy performance contract because the payments to the energy service company will be affected in such a situation. The model contract terms are designed to protect the

energy service company and to ensure that it shares part of the windfall from a price drop with your organization.

If prices go up, the model contract allows the energy service company to collect more from energy savings, while your organization pays more for its energy. This accelerated collection retires the debt faster and allows your organization to pay off the project costs more quickly and take over the energy savings stream more quickly.

Interest rate fluctuations

The Federal Buildings Initiative's *Model Energy Performance Contract* allows for adjustments if costs change beyond the energy service company's control. Interest rate adjustments are common because rates at the time of contract signing cannot be held firm throughout the construction and payback periods. The protection for the energy service company against interest rate increases will extend the contract term to cover interest rate impacts. The impact of interest rate fluctuations can be partially managed by the energy service company decisions on financing terms. Although you may not be able to set the financing rate, you can suggest appropriate refinancing strategies.

CHAPTER 8

Common Issues with Energy Performance Contracts

Some common issues that arise as building owners get involved with an energy performance contract are discussed below (see page 35 for examples of successful federal buildings' energy performance contract case studies and project highlights).

Who is in charge of building operations?

With an energy service company involved in defining operating strategies, many operators feel a loss of control. However, energy service companies do not want to run the facility. They expect the current building operators to manage the facility. The energy service company's role is to work with the building operators and lend their expertise to making energy efficiency improvements to the building's operation.

As mentioned in Step 1, your organization is responsible for appointing a project manager. This person handles all official reports and documents and involves appropriate individuals from the building or organization in any issue that may arise.

A project manager must take an active role and have the authority to make the decisions your organization needs. Otherwise, without ready access to decision-makers, the project could experience delays, increased costs in the form of increased interest payments, unrealized energy savings and additional labour costs.

Occupant comfort

After an improvement is in place, it could have an impact on occupant comfort, even though the energy savings objectives are being met. However, if the impact involves increased costs in operations or maintenance beyond those suggested in the original project proposal, your organization can resolve the situation through its ongoing collaborative working relationship with the energy service company.

Changing faces

Over the life of a long-term contract, there are bound to be changes in personnel in both the project team and the energy service company's staff. These changes can impact the management of the project and lead to a loss of enthusiasm or lack of knowledge of the original project objectives. Therefore, establish an information management plan that identifies roles and responsibilities and processes clearly, so this information is not lost.

New staff in your organization may not realize what changes the energy service company made before their employment and may only see relatively large payments made to the energy service company. Inform new project team members and management staff of the project's history, current benefits and the future savings stream that will benefit your organization.

New staff employed by the energy service company need to appreciate the skills and knowledge of all staff (the project team, operations personnel, etc.) in your organization's project building(s), because much of the success of an energy performance contract project depends on a strong relationship between your organization and the energy service company. Whenever there is a change in personnel, time must be invested into building new relationships and bringing new team members up to speed.

Who gets the savings?

Under the Federal Buildings Initiative's *Model Energy Performance Contract*, any increase in savings could retire the energy service company's investment more quickly and give your organization access to the savings earlier. Though this is a future benefit, it has a present value. Building staff may believe that as long as all savings are paid to the energy service company, there is little reason for them to even think about ways to generate further savings, let alone take any action to increase savings. More savings will not increase the energy service company's profit under the Federal Buildings Initiative's *Model Energy Performance Contract*. Remember, all savings are measured and verified. Communicate such information to staff and seek their ideas about ways to increase energy savings.

By immediately implementing staff suggestions on ways to increase energy savings, you are encouraging creativity that will probably carry on for years. The energy service company, with its technical expertise, can help finalize ideas and provide analysis and positive support. In normal- to full-cost disclosure projects, your organization and the energy service company must collaborate in achieving common goals.

Calculating energy savings adjusted to weather

You need to be able to adjust for the effects of weather on energy savings. This process is referred to in several ways, including weather correction, weather normalization, tuning to weather and weather regression. Software that tests this correlation between energy use and weather data is commercially available. For example, the measured energy use during the post-retrofit period may be a result of abnormal weather conditions, leading to retrofit energy savings that do not represent savings

during average conditions. Energy service companies normalize weather – by using statistical models that apply the same weather data to the pre- and post retrofit bills and then input the actual energy use – to determine the energy savings for the measures installed. This weather normalization ensures that any abnormal changes in weather conditions do not compromise the savings calculations.

Accounting savings versus real savings

The financial expert on your project team must be proactive in establishing a positive relationship with accounting staff and clearly communicating how savings are derived in an energy performance contract. In reviewing the invoices for utility costs derived from utility records, accountants in your organization must practice due diligence to ensure that savings claimed in the schedule of savings are verified against the utility costs paid. Weather and other adjustments made by the energy service company will be unfamiliar to accountants and may cause them to question these invoices. The key concept to bear in mind is that the invoices are for "avoided costs." If the building had not been modified, the utility costs would have been higher by the amount of the avoided costs, called the savings.

When you are reviewing savings calculations from utility records, recognize that the calculation process is not standardized in the industry. Though the accuracy of the metering may be better than 1 percent, the accuracy of adjustments for governing factors is generally much poorer. Adjustments for such factors as weather and the operating mode of the building are usually derived from minimal empirical data and are subject to engineering judgement. "Savings" are defined as the results of an agreed calculation process outlined in the energy performance contract. There is rarely absolute proof of savings.

CHAPTER 9

Conclusion

Federal buildings currently account for 88 percent of the Government of Canada's greenhouse gas emissions. An energy performance contract provides your organization with an opportunity to lead by example and guarantee energy savings, save money and help meet Canada's commitments to international greenhouse gas emission reductions.

An energy performance contract is a collaborative relationship between your organization and the energy service company. Like any other contract, energy performance contracts need to be managed attentively to run smoothly. It is critical that a strong project team of all key personnel responsible for the management and operation of the building(s) is involved right from the start of the project. Make sure to attend *Dollars to $ense* Energy Management Workshops to expand your knowledge in aspects of the process that are unfamiliar to you. Take advantage of the Federal Buildings Initiative's *Model Energy Performance Contract* and *Model Request for Proposal* to help you draft your documents. Finally, collecting accurate historical data is crucial in establishing an energy baseline. This baseline will be used as a benchmark to track current energy use against energy use after the energy service company has implemented the energy efficiency improvements.

By following the five steps outlined in this guide, your organization will be well prepared to collaborate with an energy service company on a successful energy performance contract project that will meet your sustainability objectives – and maintain energy savings long after the payout period has expired.

CHAPTER 10

Case Studies, Project Synopses and Highlights

Here are some links to case studies, project synopses and project highlights. These links demonstrate how federal organizations have made a difference by lowering their energy use and costs and reducing their greenhouse gas emissions – simply by implementing comprehensive energy efficiency retrofits using energy performance contracts arranged with energy service companies.

Case studies

- Banff National Park of Canada: Reducing Energy Consumption – Helping the Environment
  http://oee.nrcan.gc.ca/publications/federal-buildings-initiative/763
- The Royal Canadian Mint: Improving Energy Performance
  http://oee.nrcan.gc.ca/publications/federal-buildings-initiative/12608
- The Royal Canadian Mounted Police Training Academy: Partnering for Energy Efficiency Opportunities
  http://oee.nrcan.gc.ca/Publications/fbi/15513
- The Canada Centre for Inland Waters – Building on Success
  http://oee.nrcan.gc.ca/publications/federal-buildings-initiative/7157
- Communications Research Centre Canada – Reducing Operating Costs While Responding to Environmental Challenges
  http://oee.nrcan.gc.ca/publications/federal-buildings-initiative/12901
- The National Research Council of Canada: Energy Efficiency Pioneer
  http://oee.nrcan.gc.ca/8355
- Employee Awareness and the Federal Buildings Initiative
  http://oee.nrcan.gc.ca/10277

Project synopses

- Canadian Forces Base Halifax (CFB) Halifax – Building on Success
  http://oee.nrcan.gc.ca/publications/federal-buildings-initiative/2709

Project highlights

- RCMP Regional Headquarters, Winnipeg, Manitoba: Reducing Costs – Helping the Environment
  http://oee.nrcan.gc.ca/communities-government/buildings/federal/16400

Resources (www.oee.nrcan.gc.ca)

- Federal Buildings Initiative's *Model Energy Performance Contract* and *Model Request for Proposal* documents
- *Dollars to $ense* Energy Management Workshops
- ENERGY STAR® Portfolio Manager™
- Federal Buildings Initiative's Community of Practice
- Natural Resources Canada's Office of Energy Efficiency's *Implementing an Energy Efficiency Awareness Program*

APPENDIX 1

Check List: Taking Stock of Your Building(s)

Objective: To collect data to determine if an energy performance contract process and project is worthwhile for your building(s).

1. Basic building information

- ☐ Facility description
- ☐ Number, size and type of building(s)
- ☐ Occupancy (How is the building being used? e.g. offices: 9 hours/day, barracks: 24 hours/day)
- ☐ Ownership (tenant, owned, leased, etc.)
- ☐ Building management structure (Who maintains and operates the buildings?)
- ☐ Critical processes and activities (Is energy use predictable and consistent?)

2. Baseline information

- ☐ By source and by building (where applicable): energy consumption and costs for
  - ☐ Electricity
  - ☐ Natural gas
  - ☐ Refined petroleum products or "fuel oil" (Remember, natural gas is a fossil fuel.)
  - ☐ Water
  - ☐ Other (biomass, wind power, solar)
- ☐ Electrical demand, costs and peaks
- ☐ Brief description of utilities' rate structures

3. Retrofit opportunities

- ☐ State of the existing energy equipment (service life, efficiency, performance issues)
- ☐ Potential retrofits on existing equipment
- ☐ Energy efficiency or maintenance savings opportunities
- ☐ Estimated savings
- ☐ Greenhouse gas reduction opportunities
- ☐ Renewable energy, cogeneration and geothermal opportunities, where applicable

4. Recommendations

- ☐ Identification of major areas that require more analysis
- ☐ Identify actions that can be taken immediately and longer-term actions
- ☐ Recommissioning to ensure the persistence of the energy efficiency improvements
- ☐ Suitability for an energy performance contract

APPENDIX 2

Sample Proposal Assessment Criteria

To evaluate the proposals submitted by energy service companies in response to a Request for Proposal, consider the following evaluation criteria:

Financial merit

- financing interest rates
- buy-down charges without penalty and/or with penalty
- fixed-price for the feasibility study
- markups
- internal labour costs for engineering, project management and construction personnel
- performance guarantee premium: type and cost of any guarantee on energy savings
- nature and amount of applicable grants and incentives (e.g. manufacturer, utility)
- annual energy savings potential (dollars and energy), by fuel type
- simple payback for each improvement and for total project net of incentives
- breakdown of total project costs
- monitoring and verification rates

Technical merit

- justification for the baselines (pre-improvement) to be used to calculate savings
- use ENERGY STAR® Portfolio Manager™ to establish the baseline
- justification for the baseline (post-improvement) to be used to calculate savings
- overall technical and engineering approach and methodology
- proposed improvements, including no-cost changes in operations and procedures
- estimated consumption and/or demand reduction of each improvement
- estimated service life for each energy efficiency improvement
- cogeneration potential

Implementation approach

- detailed implementation plan and timeframe
- provision of updated and new operating procedures' documents, manuals, drawings and instructions
- minimizing disruptions during implementation (swing space, redundant systems, maintenance of critical functions and indoor environmental quality)
- reporting and communication protocols (advance warnings of work, signage, personnel to advise employees, safety equipment and training)
- strategy and policy for equipment procurement

Operations and maintenance approach

- estimated incremental (or reduced) operations and maintenance costs for each improvement
- preventive maintenance approach for existing, modified and new equipment and systems

- approach to monitoring and ownership of monitoring systems over life of the energy performance contract
- approach to equipment and system maintenance

Project management approach

- qualifications of project manager and key personnel (green construction, product selection and waste management practices, Leadership in Energy and Environmental Design [LEED™] or Building Owners and Managers Association [BOMA] of Canada certification)
- personnel update and qualifications from pre-qualification file
- external resources to be used

Training and awareness

- the proposed approach for delivering training to building operators and managers and staff
- the proposed approach for delivering employee awareness to building employees and occupants
- extent of the proposed training for building managers and staff
- clarity of the methodology used to assess training for building operators and managers and staff
- shared responsibilities between the energy service company, the organization and external resources on training and awareness activities, which are clearly identified
- cost breakdown of training and awareness activities, which is clearly defined and concise